

Response

Applicant: Daniel R. Marshall

Serial No.: 09/893,246

Filed: June 26, 2001

Docket No.: 10002308-1 (H303.192.101)

Title: ULTRA-HIGH DENSITY STORAGE DEVICE WITH ELECTRON BEAM STEERING

REMARKS

The following remarks are made in response to the Non-Final Office Action mailed May 24, 2004. In that Office Action, the Examiner rejected claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Gibson et al., U.S. Patent No. 5,557,596 ("Gibson") in view of Katsumura et al., U.S. Patent No. 6,307,826 ("Katsumura").

With this Response, the Applicant respectfully traverses the Examiner's rejection of claims 1-20. Claims 1-20 remain pending in the application and are presented for reconsideration and allowance.

35 U.S.C. §103 Rejections

Independent claim 1 includes the limitation "an electron beam steering mechanism for deflecting the electron beam current to different ones of the storage areas." The Examiner stated that Gibson "does not show the use of an electron beam deflector." (Office Action at para. no. 2, page 2). The Examiner also stated that:

The secondary reference discloses the use of an electron beam deflector for the purpose of positioning the beam on a desired location as shown in fig 1 elements 16 and 18. It would have been obvious to one skilled in the art at the time the invention was made to use the teachings of the secondary reference and modify the primary reference. Such modification of using a beam steering mechanism is merely an alternative engineering capability as opposed to moving the medium in order to eliminate the medium positioning apparatus. Thus one skilled in the art would have been motivated to use the teachings of the secondary reference for the purpose of positioning the beam at a desired location using a beam steering mechanism as opposed to a medium positioning mechanism. (Office Action at para. no. 2, page 2).

The Federal Circuit has stated "[i]n holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention." *Karsten Manufacturing Corp. vs. Cleveland Golf Co.*, 58 U.S.P.Q.2d 1286, 1293 (CAFC 2001). There is no suggestion in Gibson or Katsumura to combine the references in any way, let alone in a way that would produce the claimed invention. Gibson and Katsumura disclose different types of devices that rely on different techniques. The storage device of Gibson is an ultra high-density storage device made by semiconductor microfabrication techniques and includes field

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emitters. (See, e.g., Gibson at col. 1, lines 60-67). In contrast, the storage system described in Katsumura is for writing to a master disc medium, such as a DVD, using an electron beam column 3. (See, e.g., Katsumura at col. 4, line 41- col. 5, line 20).

Even if Gibson and Katsumura were combined, which there is no suggestion to do, Katsumura does not teach or suggest “deflecting the electron beam current to different ones of the storage areas” as recited in independent claim 1. Blanking electrode 16 and deflecting electrode 18 in Katsumura are used merely to assist in focusing the electron beam. (See, e.g., Katsumura at col. 5, lines 3-31). The spindle motor 5 is used to spin the master disc to enable the electron beam to write to difference locations on the master disc. (See, e.g., Katsumura at col. 5, lines 55-65).

In view of the above, independent claim 1 is not taught or suggested by Gibson and Katsumura, either alone, or in combination. The Applicant respectfully traverses the rejection of claim 1, and reconsideration and allowance of claim 1 is respectfully requested.

Dependent claims 2-10 further limit patentably distinct claim 1, and are believed to be allowable over the cited references. In addition, dependent claims 2 and 6-9 are further distinguishable over the cited references. For example, claim 2 includes the limitation “a first set of electrodes for deflecting the electron beam current in a first direction; and a second set of electrodes for deflecting the electron beam current in a second direction substantially perpendicular to the first direction.” Claim 6 includes the limitation “wherein the electron beam traces out a periodic trajectory on the storage medium.” Claim 7 is dependent on claim 6 and includes the limitation “wherein the shape of the periodic trajectory is one of a circle, ellipse, spiral, square, rectangle, and figure 8.” Claim 8 is dependent on claim 6 and includes the limitation “wherein the shape of the periodic trajectory is one of a triangle wave shape, a sawtooth wave shape, a Lissajous wave shape, a rectangular wave shape, and a sinusoidal wave shape.” Claim 9 includes the limitation “wherein at least a portion of the information stored in the storage areas is stored and read based on pulse width modulation (PWM).” With respect to all the dependent claims, the Examiner states “[w]ith respect to the limitations of the dependent claims see figs 1A-5 of the primary reference.” (Office Action at para. no. 3, page 2). Figures 1A-5 of Gibson, the primary reference, do not teach or suggest any of the limitations of the dependent claims mentioned above.

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In view of the above, dependent claims 2-10 are not taught or suggested by Gibson and Katsumura, either alone, or in combination. The Applicant respectfully traverses the rejection of claims 2-10, and reconsideration and allowance of claims 2-10 is respectfully requested.

Independent claim 11 includes the limitation "steering the electron beam current to multiple ones of the storage areas." For the same reasons as discussed above with reference to claim 1, independent claim 11 is not taught or suggested by Gibson and Katsumura, either alone, or in combination. The Applicant respectfully traverses the rejection of claim 11, and reconsideration and allowance of claim 11 is respectfully requested.

Dependent claims 12-18 further limit patentably distinct claim 11, and are believed to be allowable over the cited references. In addition, dependent claims 12 and 16-17 are further distinguishable over the cited references. For example, claim 12 includes the limitation "deflecting the electron beam current in a first direction with a first deflection mechanism; and deflecting the electron beam current in a second direction substantially perpendicular to the first direction with a second deflection mechanism." Claim 16 includes the limitation "wherein the electron beam current traces out a periodic trajectory on the storage medium." Claim 17 includes the limitation "wherein at least a portion of the information stored in the storage areas is stored using pulse width modulation (PWM)." Again, figures 1A-5 of Gibson do not teach or suggest any of the limitations of the dependent claims mentioned above.

In view of the above, dependent claims 12-18 are not taught or suggested by Gibson and Katsumura, either alone, or in combination. The Applicant respectfully traverses the rejection of claims 12-18, and reconsideration and allowance of claims 12-18 is respectfully requested.

Independent claim 19 includes the limitation "a beam deflector for deflecting the electron beam current in two substantially orthogonal directions." In addition to the reasons discussed above with reference to claim 1, Katsumura also does not teach or suggest deflecting the electron beam current in two substantially orthogonal directions as recited in independent claim 19.

In view of the above, independent claim 19 is not taught or suggested by Gibson and Katsumura, either alone, or in combination. The Applicant respectfully traverses the

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rejection of claim 19, and reconsideration and allowance of claim 19 is respectfully requested.

Dependent claim 20 further limits patentably distinct claim 19, and is believed to be allowable over the cited references. In addition, dependent claim 20 is further distinguishable over the cited references. Claim 20 includes the limitation "a plurality of beam deflectors for deflecting the electron beam currents from the plurality of field emitters in two substantially orthogonal directions." Again, Katsumura does not disclose deflecting the electron beam currents in two substantially orthogonal directions.

In view of the above, dependent claim 20 is not taught or suggested by Gibson and Katsumura, either alone, or in combination. The Applicant respectfully traverses the rejection of claim 20, and reconsideration and allowance of claim 20 is respectfully requested.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-20 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-20 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Philip S. Lyren at Telephone No. (281) 514-8236, Facsimile No. (281) 514-8332 or Jeff A.

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Holmen at Telephone No. (612) 573-0178, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

Respectfully submitted,

Daniel R. Marshall,

By his attorneys,

DICKE, BILLIG & CZAJA, PLLC

Fifth Street Towers, Suite 2250

100 South Fifth Street

Minneapolis, MN 55402

Telephone: (612) 573-0178

Facsimile: (612) 573-2005

Date: 8/18/04
JAH: kle

Jeff A. Holmen
Jeff A. Holmen
Reg. No. 38,492

CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 18th day of August, 2004.

By Jeff A. Holmen
Name: Jeff A. Holmen